CURRENT LITERATURE

MINOR NOTICES

Das Pflanzenreich.[1]—Part 27 contains the Polemoniaceae by A. BRAND, a family of peculiar interest to North American botanists. The author defines two subfamilies, COBAEOIDEAE and POLEMONIOIDEAE, the former containing Cantua and Cobaea, the latter the other ten genera. The genera and the number of their species are as follows: Cantua (6, with 2 new), Cobaea (9), Polemonium (29, with 3 new), Collomia (12), Phlox (49, with 9 new), Gilia (111, with 12 new), Aliciella (1), Gymnosteris (1), Navarretia (41, with 7 new), Langloisia (5, with 1 new), Loeselia (12), Bonplandia (1). The full synonymy and citation of collections, the elaborate splitting-up of the species into subspecies, varieties, and subvarieties, and the excellent illustrations, make the monograph a mine of information for students of the family. This careful traversing of American taxonomic work from the European standpoint is most instructive, and helps to focus attention upon our differences.—J. M. C.

Tylostomeae.—This "very natural tribe" of Gasteromycetes is described by LLOYD in a separately printed pamphlet,[2] which is dedicated to M. P. HARIOT, whose portrait forms its frontispiece. LLOYD recognizes seven genera, of which five are monotypic, Tylostoma containing the most of the species. All are illustrated by good photographs.—C. R. B.

NOTES FOR STUDENTS

Monograph of Ravenelia.—A valuable contribution to the literature of the rusts has appeared in DIETEL'S[3] monograph of the genus Ravenelia. In the past, investigations relating to this peculiar genus have been necessarily of a more or less fragmentary nature, dealing with the morphology and taxonomy of a limited number of species only. Since the last monograph[4] which is at all comprehensive, a number of new species have been added to the genus from different parts of the world. On this account a full morphological and taxonomic treatment is especially desirable. The present paper is introduced by a discussion of

[1] ENGLER, A., Das Pflanzenreich. Heft 27. Polemoniaceae von A. Brand. pp. 203. *figs. 39 (207)*. Leipzig: Wilhelm Engelmann. 1907. *M.* 10.20

[2] LLOYD, C. G., The Tylostomeae. 8vo. pp. 29. *pls. 12. figs. 6.* Cincinnati, O.: The author. 1906.

[3] DIETEL, P., Monographie der Gattung *Ravenelia* Berk. Beih. Bot. Centralbl. **20**:343–413. *pls. 5–6.* 1906.

[4] DIETEL, P., Die Gattung Ravenelia. Hedwigia **33**:22–29, 367–371. 1894.

the morphology of the genus. In general the mycelium, aecidiospores, and uredospores offer no striking characters different from other rusts; a few points of interest, however, are noted. The mycelium is usually intercellular and nourished by haustoria; but in some species it penetrates the cells, and in *R. atrocrustacea* on Swartzia it penetrates the vessels, developing abundantly within them. In several species the mycelium is perennial. Aecidia occur in only a few species and present no unusual peculiarities. The uredospores correspond to those of other rusts; but in the species on Cassia the uredospores are formed between the epidermal wall and the cuticle.

The teleutospores, which constitute the most interesting spore-type, are treated with some detail. A great many modifications exist as to the number of cysts, spores, and hyphae making up the spore-heads; but the author has arranged these into types within which the mode of building up the spore-head is remarkably uniform. These types are briefly as follows: (1) all spore-heads have a definite number of stalk-hyphae, which is uniform for each species, and each hypha gives a definite number of outer and inner spores; (2) the number of hyphae bearing the spore-heads is variable, but each hypha bears a definite number of spores, which is uniform within each species; (3) there is no uniformity in the number of hyphae and spores; the simplest forms of this last type have a single stalk-hypha which bears several spore-cells.

Heretofore the genus Ravenelia has been regarded as related to Puccinia, but on account of the occurrence of longitudinal divisions in the heads, DIETEL thinks the genus bears a closer relationship to the genera Diorchidium, Anthomyces, and Sphaerophragmium.

In the purely taxonomic part of the work 81 species are described, all of which are placed in the genus Ravenelia. The genera Pleoravenelia and Neoravenelia, recently separated from Ravenelia by LONG, are not retained, being considered insufficiently distinct. The author divides the genus into two sections: Haploravenelia and Pleoravenelia, the former comprising Ravenelia of LONG. —H. HASSELBRING.

Bacteria and mineral salts.—BENECKE,[5] in an investigation of the pigment-producing powers of *B. pyocyaneus* and *B. fluorescens*, lays emphasis upon the need of careful purification of chemicals and selection of glass receptacles in bacteriological experiments with synthetic media. He used several kinds of glass control, including quartz, which is too expensive for general use, Jena glass which is K-free but contains Mg, resistance glass, Vienna glass which is probably Mg-free, Bohemian glass, and ordinary glass. With the various flasks he could obtain practically all the contradictory results of previous investigators, such as NOESSKE, THUM, JORDAN, GESSARD, SULLIVAN, and LOEW. By means of the controls he could trace most of the discrepancies in their results to impurities of chemicals or glassware. BENECKE'S chemicals were washed and recrystallized

5 BENECKE, W., Untersuchungen über den Bedarf der Bakterien an Mineralstoffen. Botanische Zeitung **65**: 1–23. 1907.